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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/035,503

10/25/2001

Katsuji Iguchi

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7590

02/02/2004

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EXAMINER

LATTIN, CHRISTOPHER W

ART UNIT

PAPER NUMBER

2812

DATE MAILED: 02/02/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/035,503

Applicant(s)

IGUCHI ET AL.

Examiner

Christopher W Lattin

Art Unit

2812

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on 21 October 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 and 22 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-20 and 22 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
- a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 6, 11, 15 and 17 are rejected under 35 U.S.C. 102(b) as being anticipated by Szluk et al. (U.S. Patent 4,703,551).

Szluk et al. teach a method of forming a MOS device on a silicon substrate 10, comprising preparing a substrate to contain a conductive region 13 of a first conductivity type having a first device active area; forming a gate electrode structure on the first device active area, said gate electrode structure including a gate electrode 16p and insulating sidewalls 29p; implanting ions of an opposite conductivity type from that of said first device active area into the exposed portions of said conductive region to form source and drain regions 27p and 28p on opposite sides of said gate structure; and depositing by selective CVD a silicide layer 41p, 42p, and 46p over said source and drain regions and over said gate electrode. See especially column 9 line 61- column 10 line 7.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

Art Unit: 2812

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 2-4, 7-9, 12-14 and 18-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Szluk et al. (U.S. Patent 4,703,551) in view of Wu (U.S. Patent 6,069,044).

Szluk et al. are applied supra and teach all of the limitations of the presently claimed method, but fail to teach low energy plasma immersion techniques for ion implantation. Wu teach a method of implanting ions using plasma immersion ion implantation at an energy in the range of about 0.5 keV to 2 keV and a dose in a range of about $10 \times 10^{14} \text{ cm}^{-2}$ to $10 \times 10^{15} \text{ cm}^{-2}$ (which corresponds to a concentration $10 \times 10^{19} \text{ cm}^{-3}$ to $10 \times 10^{22} \text{ cm}^{-3}$) in order to form shallow junction regions. It would have been obvious to one skilled in the art at the time of the invention to implant using plasma immersion ion implantation and the parameters indicated to form shallow junction regions that can perform at high speeds.

Claims 5, 10, 16 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Szluk et al. (U.S. Patent 4,703,551) in view of Tsai et al. (U.S. Patent 5,757,045).

Szluk et al. are applied supra to claims 1, 6, 11 and 17 and teach all of the limitations of the presently claimed method, but fail to teach depositing an insulating layer over the structure and metallizing the structure. Tsai et al. teach that it is well known to form an insulating layer and metallizing the structure to form connections to

the device. It would have been obvious to one skilled in the art at the time of the invention to form an insulating layer and metallizing the structure in order to form electrical connections for the device.

Response to Arguments

Applicant's arguments filed 10/21/2003 have been fully considered but they are not persuasive. Applicant argues that Szluk et al. fail to teach single-step implantation.

First, the claims fail to limit the method to single step implantation because the transition "comprising" leaves the method open to additional steps. From the MPEP § 2111.03 entitled "Transitional Phrases":

The transitional term "comprising", which is synonymous with "including," "containing," or "characterized by," is inclusive or open-ended and does not exclude additional, unrecited elements or method steps. See, e.g., *Genentech, Inc. v. Chiron Corp.*, 112 F.3d 495, 501, 42 USPQ2d 1608, 1613 (Fed. Cir. 1997) ("Comprising" is a term of art used in claim language which means that the named elements are essential, but other elements may be added and still form a construct within the scope of the claim.); *Molculon Research Corp. v. CBS, Inc.*, 793 F.2d 1261, 229 USPQ 805 (Fed. Cir. 1986); *In re Baxter*, 656 F.2d 679, 686, 210 USPQ 795, 803 (CCPA 1981); *Ex parte Davis*, 80 USPQ 448, 450 (Bd. App. 1948) ("comprising" leaves "the claim open for the inclusion of unspecified ingredients even in major amounts").

The transitional phrase "consisting of" excludes any element, step, or ingredient not specified in the claim. *In re Gray*, 53 F.2d 520, 11 USPQ 255 (CCPA 1931); *Ex parte Davis*, 80 USPQ 448, 450 (Bd. App. 1948) ("consisting of" defined as "closing the claim to the inclusion of materials other than those recited except for impurities ordinarily associated therewith."). A claim which depends from a claim which "consists of" the recited elements or steps cannot add an element or step. When the phrase "consists of" appears in a clause of the body of a claim, rather than immediately following the preamble, it limits only the element set forth in that clause; other elements are not excluded from the claim as a whole. *Mannesmann Demag Corp. v. Engineered Metal Products Co.*, 793 F.2d 1279, 230 USPQ 45 (Fed. Cir. 1986).

Applicant utilizes the term “comprising”, which permits the inclusion of additional steps not claimed. The phrase “consisting of” would eliminate the breadth of the claim that currently includes additional implantation steps. Thus, if the applicant wishes to limit the method to a single implantation step, the transitional phrase “consisting of” should be used.

Second, even if the claims did limit the method to only one implantation step, the Szluk et al. reference teaches a solo implantation step to form source/drain regions 28N. Applicant’s argument that multiple implantation steps are taught to form source and drain regions is not persuasive, as one skilled in the art would recognize LDD (lightly doped drain) regions as independent of the source/drain regions. The reference, like the presently claimed method teaches forming source and drain regions in a single implantation step. While additional regions, such as LDD regions, are formed in Szluk et al., the presently claimed method reads on the reference because it merely requires that the source drain regions be formed in one masking step.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christopher Lattin whose telephone number is (703) 305-3017 ((571) 272-1673 after 02/03/2004). The examiner can normally be reached Monday through Friday from 8:00 A.M. to 5:00 P.M.


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Niebling, can be reached at (703) 308-3325 ((571) 272-1679 after 02/03/2004). The fax number for this Group is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 308-0956.

CWL



January 26, 2004



John F. Niebling
Supervisory Patent Examiner
Technology Center 2800